Courses are subject to revision and final approval.

AGRICULTURE AND NATURAL RESOURCES

475*. International Studies in Agriculture and Natural Resources
Fall, Spring, Summer. 2 to 6 credits. May reenroll for a maximum of 6 credits.
R: Approval of department; application required. Study-travel experience emphasizing contemporary problems affecting agriculture and natural resources in the world, national and local communities. Case studies and interviews with officials, community leaders and leading professionals.
QA: ANR 475

481*. American Studies Theory, Methods, Bibliography
Fall, Spring. 3 to 4 credits. R: Graduate Arts & Letters American Studies
Methods and bibliographical sources of American Studies research. Interdisciplinary approaches to studying American culture. QA: AL 801

490*. Independent Study
Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits.
R: Approval of the program director Special projects, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings. QA: A L 803

491*. Special Topics in American Studies
Fall, Spring, Summer. 4(0-0) May reenroll for a maximum of 12 credits.
R: Approval of the program director Special topics supplementing regular course offerings proposed by faculty on a group study basis for graduate students.
QA: A L 802

517*. Veterinary Neuroanatomy
Spring. 1(0-0) P: Admission to the College of Veterinary Medicine. R: College of Veterinary Medicine Veterinary Medicine none Introduction to the anatomy of the canine nervous system.

551. Medical Gross Anatomy
Fall, 7(4-6) R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Gross anatomy of the human body using projections, medical imaging, clinical correlation, case studies, video tapes, and computer-aided instruction.

561. Medical Histology
Spring. 3(2-2) R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Histology of the human body.

585. Human Gross Anatomy Dissection
Fall, Spring, Summer. 2 to 7 credits. May reenroll for a maximum of 15 credits.
P: ANT 551 R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Dissection of selected regions of the human body.

589*. Veterinary Histology
Fall, Spring, Summer. 4(2-2) for a maximum of 9 credits.
P: Approval of department Various anatomical fields such as gross anatomy, histology, tissue culture, cytology, neurology and embryology will be studied.
QA: AN 589

591. Graduate Student Seminar
Spring of even-numbered years. 1 to 3 credits.
P: Antemocrat graduate program Supervised practice in delivering and evaluating written abstracts and public oral presentations of anatomical sciences, techniques or organization, timing and effective illustrations.
QA: ANT 581

592*. Advanced Neuroanatomy
Spring of odd-numbered years. 1 to 3 credits. P: Permission of instructor Current topics concerning anatomy and physiology of CNS cells and their processes.
QA: AN 592

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.
Anatomy R: Anatomy

885. Vertebrate Neural Systems
Spring of odd-numbered years. 4(3-2) Interdepartmental with the Department(s) of Physiology.

Comparative analysis of major component systems of vertebrate brains, their evolution, ontogeny, structure and function in fish, amphibians, reptiles, birds and mammals.

QA: ANT 885 ANT 886

889. Master's Thesis Research
Fall, Spring, Summer. 1 to 12 credits. P: Admission to M.S. degree program in Anatomy. R: Anatomy

QA: ANT 899

ANIMAL SCIENCE

110. Introductory Animal Agriculture
Fall. 3(2-2)


P: ANS 211

112. Introductory Animal Management
Spring. 3(2-2) P: ANS 110

Principles of managing beef and dairy cattle, horses, poultry, sheep and swine throughout their lifecycle. Topics include genetics, nutrition, reproduction, health, care, and economically efficient production.

210*. Animal Products

QA: ANS 110 ANS 211 QM: ANS 106 FSC 300

211. Animal and Product Evaluation
Spring. 3(1-6)


212. Merchandising Purebred Livestock
Spring of odd-numbered years. 2(1-2) R: Open only to sophomores, juniors, and seniors. Purebred livestock industry. Private treaty and auction sales. Advertising, animal selection and budgeting of purebred livestock sales. Field trips required.

QA: ANS 318

262. Sheep Management
Spring. 3(2-2) R: Open only to sophomores, juniors, and seniors.

Principles of sheep management: genetics, reproduction, nutrition, marketing, and economics. Field trips required.

QA: ANS 472

300A. Livestock Judging
Fall of even-numbered years. 2(1) P: ANS 211. R: Open only to seniors.

Evaluation of conformation and performance records of beef cattle, swine and sheep. Represent MSU in intercollegiate competition. Field trips required.

QA: ANS 357A ANS 357B QA: ANS 357C

300B. Meat Evaluation and Grading
Fall of odd-numbered years. 2(1) P: ANS 211. R: Open only to seniors.

Evaluation of beef, pork, and lamb carcasses and wholesale cuts according to industry standards. Federal grading standards. Field trips to meat packing operations required. Represent MSU in intercollegiate competition.

QA: ANS 257A QA: ANS 257B

300C. Dairy Cattle Judging
Fall. 2(1) P: ANS 211. R: Open only to juniors and seniors.

Evaluation of conformation of various breeds of dairy cattle. Represent MSU in intercollegiate competition.

Field trips required.

QA: ANS 211 QA: ANS 337

300D. Horse Judging
Fall. 2(1) P: ANS 211. R: Open only to juniors and seniors.


QA: ANS 211 QA: ANS 337

310. Livestock and Product Marketing
Fall. 3(3-3) Interdepartmental with the Department(s) of Agricultural Economics.

P: ANS 112 R: Sophomores and above.

Movement of livestock into and through market channels. Market structures, futures, options, and current issues. Field trips required.

QA: ANS 347A QA: ANS 347B

311. Principles of Animal Feeding and Nutrition
Fall. 4(3-2) P: CHEM 143, PSL 250.


QA: CHEM 140 PSL 241 QA: ANS 313A ANS 313B

314. Genetic Improvement of Farm Animals
Fall. 4(3-2) P: ANS 110, MTH 116. R: Not open to freshmen and sophomores.

Qualitative and quantitative inheritance in domestic farm animals. Statistical concepts and probability related to animal breeding. Improvement of dairy cattle, livestock, and horses through genetics and mating systems.

QA: ANS 110 MTH 109ORMTH 110OR QA: ANS 314

315. Anatomy and Physiology of Farm Animals
Spring. 4(3-2) P: ANS 112, PSL 250.


QA: ANS 211 PSL 241 QA: ANS 315

401. Issues in Animal Agriculture
Spring. 3(3-0) P: ANS 313 or ANS 314 or ANS 315. R: Open only to seniors.

Societal issues related to local, national and international animal agriculture.

QA: ANS 313 OR ANS 313B OR ANS 314 QA: ANS 310

405. Endocrinology of Reproduction
Fall. 3(3-0) P: ANS 315 or PSL 250 or BCH 401. R: Not open to freshmen and sophomores.

Endocrine regulation of reproduction. Cellular and molecular aspects of gametogenesis, folliculogenesis, sexual cycles, fertilization, sex differentiation, gestation, and parturition. Technology to regulate reproduction.

QA: PSL 241 AND PSL 200 OR BCH 401 QA: ANS 455

407. Food and Animal Toxicology
Fall. 3(3-0) Interdepartmental with the Department(s) of Food Science.

P: BCH 200 or BCH 401 R: Juniors and above.

Fundamental principles of the relationship between food and animal toxins including impact on animal production, residues in food products, food safety assessment, and control methods.

QA: BCH 200 OR BCH 401 QA: ANS 413A

407L. Toxicology Methods Laboratory
Fall. 2(4) Interdepartmental with the Department(s) of Food Science.

P: ANS 407 or concurrently R: Juniors and above.

Laboratory techniques for evaluating potential toxicity of chemicals to living systems. Field trip to industrial toxicology laboratory required.

QA: ANS 413A QA: ANS 413B

410. Critical Analysis of Issues in Animal Science
Fall. 2(3-0) P: ANS 313 or ANS 314 or ANS 315. R: Open only to seniors. Traditional animal management practices and evolving technologies. Topics will vary each year.

QA: ANS 313 OR ANS 314 OR ANS 315

413. Non-Ruminant Nutrition
Spring. 4(3-2) P: ANS 313. R: Not open to freshmen and sophomores.

Nutrition of horses, swine and poultry. Digestive and metabolic development and nutrient requirements. Relationship of genetics, endocrinology, immunology, and environment to nutrition.

QA: ANS 313B QA: ANS 483 ANS 493

414. Advanced Animal Breeding and Genetics
Spring. 4(3-2) P: ANS 314. R: Not open to freshmen and sophomores.

Application of genetics to animal breeding. Current and potential selection programs and crossbreeding systems of dairy cattle, horse and livestock populations. Expected response to selection methods.

QA: ANS 314 QA: ANS 454 ANS 494

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